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10/582,713

06/12/2006

Michel Papuchon

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08/25/2008

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EXAMINER

BOLDA, ERIC L

ART UNIT

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3663

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/582,713 | Applicant(s) PAPUCHON ET AL. | |
| | Examiner ERIC BOLDA | Art Unit 3663 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 14-27 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/12/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because the words "Figure 1A" appear at the end, which may cause confusion. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 17 and 19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claims recite "wherein the source for emitting the pump beam means is extracted from the source for emitting the target-illuminating beam". This implies that the wavelength of the pump beam is equal to the wavelength of the target-illuminating beam which is amplified when the gain medium is pumped. However, it is well known that in a gain medium, the wavelength of the pump light must always be *less* than the wavelength of the light to be amplified, because otherwise no inversion of population and no gain could be achieved. See e. g. Fig. 2B of Duguay.

Therefore, the system would not function as described in claim 1, if the limitation of claims 18-19 were included.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 14 and 27, and claims 15-26 dependent on them are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors. Examples of unclear language include “..in such a way as to allow the switching device to be actuated in the on mode or off mode respectively, in that it further includes a control unit for controlling the pumping means, allowing the switching device to be actuated in the one mode in at least one temporal winder of predetermined duration”. Further, some of the claim language appears to make the limitations optional, for example claim 20 “it being possible for said elements to be pumped selectively by said pumping means”. MPEP § 2173.05(d). The claims are interpreted as best understood by the Examiner.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
7. Claims 14-19 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maillet (US 4,197,006) in view of Duguay (US 3,521,070) , both cited in applicants IDS filed June 12, 2006.

With regard to claim claim 14, Maillet discloses a laser telemetry system comprising

- A channel for emission of a laser beam (2) from laser (1), illuminated a target
- A channel for receiving the wave backscattered by the target (reflected at (3) and passing through lens (10))
- An optical switching device (motor driven diaphragm (18)) receiving the backscattered wave, which can be actuated during a temporal window of fixed duration (Fig. 4). The optical switch prevents interference arising from backscattered noise from reaching the photoelectric receiver (9)

Maillet does not disclose that the optical switch comprises an optical gain medium and pumping means; rather a mechanical optical switch is shown in Fig. 2. However, Duguay teaches Fig. 1 an optical gate (or switch) that allows passage of a light beam

Art Unit: 3663

when the gain medium (12) is pumped (to achieve population inversion) (1st col. lines 55-60), and substantially blocks the passage of a light beam from source (14) when the gain medium is unpumped. It would have been obvious to one skilled in the art (e. g. an optical engineer) to replace the motor driven optical switch of Maillet, with the optical gate of Duguay, for the advantage of faster switching speeds, as well as reducing the number of moving parts which are prone to wear after repeated use.

With regard to claim 15, it is inherent that the gain medium amplifies the backscattered wave when it is pumped.

With regard to claim 16, the pumping means comprises a source for the pump beam (16)(Duguay).

With regard to claims 17 and 19, the pump light is extracted from the gate pulse source (16).

With regard to claim 18, the optical switch is positioned near an intermediate focal plane (Fig. 1, Maillet).

With regard to claim 25, the gain medium has at least three transition levels (Fig. 2B).

8. Claims 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maillet (US 4,197,006) in view of Duguay (US 3,521,070) as applied to claim 14 above, and further in view of Mace et al. (US 5,454,058). Neither Maillet nor Duguay disclose that the gain medium is a semiconductor, particularly InGaAsP, that is pumped by optical or electrical pumping means. However, Mace et al. teaches an optical signal switch that utilizes gain and absorption in a similar manner as the optical switch of

Art Unit: 3663

Dugauy. The active component in gain medium layer (14) of the device is InGaAsP, a semiconductor with a band gap of 1.1 microns. The device may be pumped electrically or optically (7th col. line 67, 8th col. lines 1-2). It would have been obvious to one skilled in the art (e. g. an optical engineer) to utilize the semiconductor material of Mace, with either electrical or optical pumping to provide the gain, in the optical device of Maillet as modified by the optical switch of Dugauy, since it was utilized for the same purpose of optical switching.

9. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maillet (US 4,197,006) in view of Dugauy (US 3,521,070) as applied to claim 14 above, and further in view of Mace et al. (US 5,991,476). Neither Maillet nor Dugauy disclose that the gain medium contains erbium ions, and the optical pumping means operates at 0.98 or 1.48 microns. However, Baney et al. teaches that a common optical amplifier is doped with erbium ions. The erbium doped material amplifier an optical signal when pumped by a pump source of light with wavelength 0.98 or 1.48 microns (1st col. lines 20-27). It would have been obvious to one skilled in the art (e. g. an optical engineer) to use an erbium-doped gain medium, with appropriate optical pumps, in the optical device of Maillet as modified by the optical switch of Dugauy, since the gain medium was widely available.

10. Claims 20 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maillet (US 4,197,006) in view of Dugauy (US 3,521,070) as applied to claim 14 above, and further in view of Lawandy (US 5,448,582). Neither Maillet nor Dugauy disclose that the gain medium is arranged in the form of a matrix of optical gain

elements, each separately pumped. However, Lawandy teaches (Fig. 9a) optical gain media arranged in a matrix of pixels (35) and separately pumped (control element). It would have been obvious to one skilled in the art (e. g. an optical engineer) to divide the gain medium into separate pixels, as taught by Lawandy, in the optical device of Maillet as modified by the optical switch of Duguay, for the advantage of including imaging.

Note that the citations made herein are done so for the convenience of the applicant; they are in no way intended to be limiting. The prior art should be considered in its entirety.

Information Disclosure Statement

11. The information disclosure statement filed June 12, 2006 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file; however, only the US patents referred to therein have been considered.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Ho, Davis, and Ikeda.

13. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Eric Bolda whose telephone number is 571-272-8104. The examiner can normally be reached on M-F from 8:30am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Jack Keith, can be reached on 571-272-6878. Please note the fax phone

Art Unit: 3663

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Eric Bolda/

Primary Examiner, Art Unit 3663